

## CHAPTER 2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter provides detailed information on the proposed action and alternatives that are analyzed in this EIS/OEIS. In addition to conducting current test and training operations at the Naval Air Warfare Center Weapons Division (NAWCWPNS) Point Mugu Sea Range (Sea Range), NAWCWPNS Point Mugu proposes: 1) to accommodate theater missile defense (TMD) testing and training at NAWCWPNS Point Mugu; 2) to accommodate an increase in current levels of training exercises at NAWCWPNS Point Mugu; and 3) to modernize facilities to enhance the existing testing and training capabilities at NAWCWPNS Point Mugu.

This chapter is divided into two major subsections: Section 2.1 (page 2-1) describes the major elements of the proposed action and Section 2.2 (page 2-18) describes alternatives to the proposed action, including the No Action Alternative. The major elements of the proposed action described in Section 2.1 include the Theater Missile Defense Element (2.1.1), the Training Element (2.1.2), and the Facility Modernization Element (2.1.3). A glossary of operational terms and their definitions is presented in Chapter 10.

### 2.1 PROPOSED ACTION

The NAWCWPNS Point Mugu Sea Range currently supports five general categories of tests to evaluate sea, land, and air weapons systems: 1) air-to-air tests, 2) air-to-surface tests, 3) surface-to-air tests, 4) surface-to-surface tests, and 5) subsurface-to-surface tests. The Sea Range also supports three general categories of training including: 1) Fleet training exercises, 2) small-scale amphibious warfare training, and 3) special warfare training. (Current test and training activities are described in more detail in Chapter 3.) In addition to the current test and training operations conducted on the Sea Range, NAWCWPNS Point Mugu proposes to accommodate TMD test and training activities and an increase in the current level of both Fleet training exercises and special warfare training. Facilities at Naval Air Station (NAS) Point Mugu and San Nicolas Island would be modernized to increase the Sea Range's capability to support existing and future operations.

The specific testing, training, and facility modernization proposals evaluated in this EIS/OEIS are based on NAWCWPNS Point Mugu's current knowledge of priorities for future testing and training, and the needs and desires of NAWCWPNS Point Mugu to attract more testing and training activity to the Sea Range. Therefore, while at the current time there is no specific commitment to conduct TMD testing and training on the Sea Range, this EIS/OEIS evaluates the environmental impacts associated with TMD activities in order to provide the ability to conduct TMD work in the future. The three separate elements of the proposed action — TMD, training, and facility modernization — are discussed in the following sections.

#### 2.1.1 Theater Missile Defense Element

“TMD” is defined as the ability of the United States to defend its armed forces deployed abroad and its friends and allies against the threat of missile attack from both short- and long-range missiles in any theater of operations. The “theater” is defined as a geographic region encompassing the military operational area. The term TMD is used to describe a whole family of atmospheric and exo-atmospheric defensive missile programs and thus encompasses a wide variety of programs. Consequently, all services within the Department of Defense (DoD) and several allied countries are involved with development of various TMD testing and training programs. As such, TMD is envisioned to be part of a comprehensive, integrated defense system. The TMD system will not be based at fixed sites but will be capable of rapid



deployment by aircraft, sea, or ground transportation anywhere in the world to support U.S. troops and allies.

Different types of TMD are being developed to counter specific threat capabilities. Since the distances between threats to U.S. assets can vary considerably, TMD intercept altitudes correspondingly vary greatly, requiring large areas tailored to specific testing and training purposes. The Navy, other DoD services, and several allied countries are developing different types of TMD that require appropriate facilities for safely testing and training these systems. For example, the Pacific Missile Range Facility (PMRF) in Hawaii was recently approved for certain types of TMD tests (TMD testing at PMRF has been evaluated in a previous EIS; U.S. Navy 1998).

Both weapons system testing and training are critical to the successful establishment and operation of new TMD systems. The DoD conducts research, test, and evaluation on its defense programs when acquiring new systems. Testing and evaluation are designed to provide necessary information regarding risk and risk mitigation; to furnish empirical data to validate models and simulations; to assess technical performance specifications and system maturity; and to determine whether systems are effective, suitable, and survivable for their intended use. Much of the design, development, and testing of defense systems is conducted in the laboratory and with computer simulations. However, these data must be verified and validated against real-world conditions, resulting in the need for system testing in a realistic environment. Once a system's operational effectiveness is confirmed, the system is ready for training by DoD operating services. Weapons system training ensures that operating forces are skilled and ready to successfully implement a defense system; allows for integration within existing operating procedures; and facilitates the development of safe and effective operating protocols.

NAWCWPNS Point Mugu proposes that the Sea Range accommodate four distinct types of TMD testing and training activities: 1) boost phase intercept, 2) upper tier, 3) lower tier, and 4) nearshore intercept events at San Nicolas Island. The differences in these types of TMD can be characterized by the phase of flight of target missiles and proximity to defended assets. [Figure 2-1](#) shows a schematic representation of proposed TMD scenarios. In general, these four types of TMD can be distinguished based on the altitude of intercept of the missile and target. Boost phase refers to intercepts during the boost (i.e., "takeoff") period of flight and are typically below 50,000 feet (15,240 meters [m]). Upper tier includes intercepts generally above 100,000 feet (30,480 m) while lower tier includes intercepts typically between 50,000 and 100,000 feet (15,240 and 30,480 m). Finally, nearshore intercepts occur at very low altitudes (i.e., below 1,000 feet [300 m]) close to the shore.

The proposal addressed in this EIS/OEIS includes the accommodation of testing and training activities in each of the four TMD categories. The proposal to increase levels of other training activities (non-TMD) is described in [Section 2.1.2](#), Training Element. NAWCWPNS Point Mugu proposes that the Sea Range could accommodate the following number of TMD test and training events annually: three boost phase intercept, three upper tier, three lower tier, and eight nearshore intercept. The proposed tempo of TMD activities is based on anticipated future use of the Sea Range. For the upper and lower tier categories, NAWCWPNS Point Mugu proposes to provide capabilities for both target launch and test missile firings on the Sea Range. Operations projections for proposed TMD activities are presented in Section B.6 of Appendix B. The four types of TMD activities are described in more detail in the following sections. Since TMD activities include various missile and target launch platforms, figures depicting each of the four TMD types should be considered representative of a typical scenario; specific details regarding potential launch platforms are included within the text.

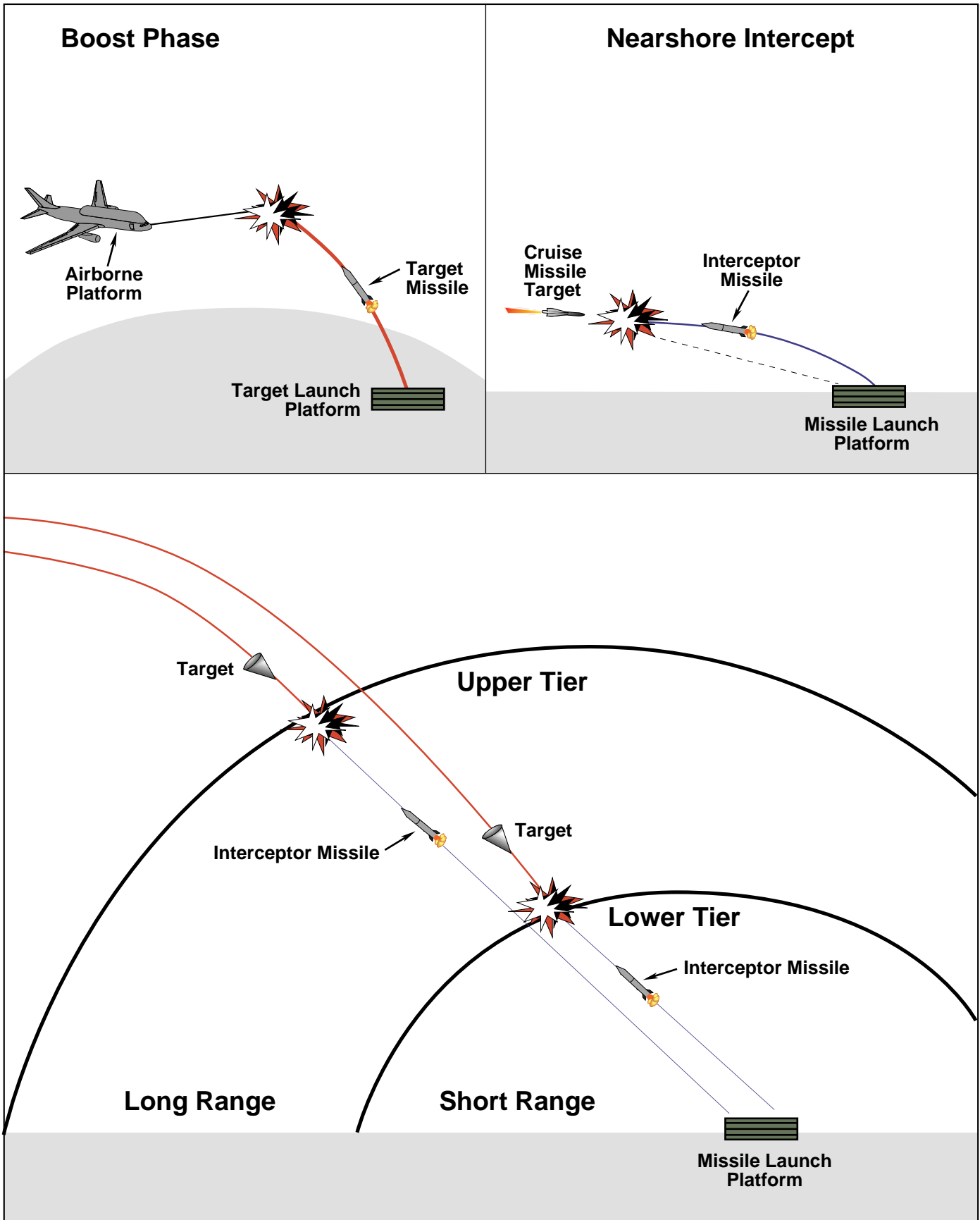


Figure 2-1  
Proposed Representative Testing Scenarios



### 2.1.1.1 Boost Phase Intercept

#### A - General Overview

Boost phase intercept systems are designed to intercept tactical or theater ballistic missiles (TBMs)<sup>1</sup> in flight, during the boost (powered ascent) period of flight (see [Figure 2-1](#)). In order for the weapon to reach the TBM shortly after launch, current boost phase intercept concepts generally require approaching enemy borders with an aircraft carrying the system. The aircraft carrying the system must be able to remain aloft a long time to ensure full-time coverage of a threat area. Boost phase intercept systems often use lasers (e.g., a chemical-oxygen-iodine laser) to intercept the target. NAWCWPNS Point Mugu proposes to accommodate up to three laser boost phase intercept test or training events per year. Airborne laser (ABL) boost phase intercept testing has been evaluated in a previous EIS (U.S. Air Force 1997a); this EIS/OEIS tiers off and where necessary provides summarized information from the Air Force EIS. [Figure 2-2a](#) shows the approximate range areas to be used to accommodate representative boost phase intercept activities.

#### B - Boost Phase Intercept Participants

During boost phase intercept test or training events, a highly modified Boeing 747 would operate at altitudes of 35,000 feet (10,668 m) or above and be operating on the Sea Range for up to 8 hours, depending on test and training needs. It would be accompanied by fighter aircraft that would be operating on the Sea Range for up to 2 hours or longer if air refueling is provided. Other support aircraft such as range safety and radar surveillance aircraft could be operating on the Sea Range for up to 10 hours depending on the needs of the test or training event. Targets could either be air-launched, sea-launched, or surface-launched from San Nicolas Island or Vandenberg Air Force Base (VAFB). Aviation rescue and support boats would be on the Sea Range only during the test or training event because their endurance is constrained by fuel.

#### C - Hazard and Debris Patterns

A safety hazard pattern is the maximum surface area that could be affected by a weapon if it does not follow its prescribed flight path. Established flight termination procedures ensure that the weapon remains within the safety hazard pattern. The debris intercept area, a smaller subset of the safety hazard pattern, is the area that is exposed to the potential impact of falling pieces of a missile or target as the result of an intercept (refer to [Section 3.0.2.1](#) for a more detailed description). Safety hazard patterns and debris intercept areas increase in size as the altitude of intercept increases. However, the density of the debris pattern decreases with increasing altitude intercept. For boost phase intercept events with intercepts of target missiles at altitudes of about 50,000 feet (15,240 m), the footprint of the safety hazard pattern would be located over several range areas (see [Figure 2-2a](#)).

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<sup>1</sup> Theater or “tactical” ballistic missiles are relatively short-range ballistic missiles as opposed to intercontinental ballistic missiles. An example of a theater or tactical missile is the “Scud” missile used by Iraq during the Persian Gulf war in 1990. The term “ballistic” means that a missile has both powered and unpowered phases of flight and the flight path that it follows is typically a ballistic arc (i.e., normally no flight corrections are made to the flight path after engine cut-off).

# TMD Element

## A) Representative Boost Phase Intercept Scenarios



### Legend

- Interceptor Launch Area
- Point Mugu Sea Range
- Target Launch Area
- Debris Intercept Area
- Hazard Area



40 0 40 Nautical Miles

Projection: Universal Transverse Mercator  
North American Datum 1927  
Zone 11

**Figure**  
**2-2a**

### 2.1.1.2 Upper Tier

#### A - General Overview

Upper tier TMD attempts to intercept ballistic targets at long ranges and outside of the atmosphere. Upper tier is designed to engage threat ballistic targets at high altitudes and long range, enabling the defense of large ground areas and the ability to take multiple shots if necessary. Upper tier systems require test and training ranges that offer full instrumentation, ability to accommodate long-range test and training scenarios, proximity to service assets, and target launch capabilities. The upper tier programs require large areas for testing and training. NAWCWPNS Point Mugu proposes to accommodate up to three upper tier test or training events per year. However, the Sea Range could serve as the launching area for either the interceptor missile or the ballistic target. In either circumstance, the hazard and intercept areas depicted in [Figure 2-2b](#) are representative of upper tier scenarios.

#### B - Upper Tier Participants

Interceptor missiles could be sea-launched (e.g., using a vessel or launch barge) from the Sea Range or launched from San Nicolas Island. Targets could be air-launched (e.g., from C-130 aircraft), sea-launched, or surface-launched from San Nicolas Island. If vessels are used to fire the missile or target, they would likely be operating on the Sea Range for two to three days during preparation for the test or training event, as would the necessary support ships. Range safety and radar surveillance aircraft could be operating on the Sea Range for up to 10 hours or more depending on the needs of the test or training event. Aviation rescue and support boats would be on the Sea Range only during the test or training event because their endurance is constrained by fuel.

#### C - Hazard and Debris Patterns

The safety hazard patterns and debris intercept areas increase in size as the altitude of intercept increases. For upper tier events with intercepts of target missiles out of the atmosphere (above 100,000 feet [30,480 m]), the footprint of a debris pattern could cover virtually all of the Sea Range west of San Nicolas Island and south of W-537. However, when the debris pattern is this large, the density of the debris is extremely low. Non-participants would be cleared of an area much larger than the area where there is a potential hazard from debris.

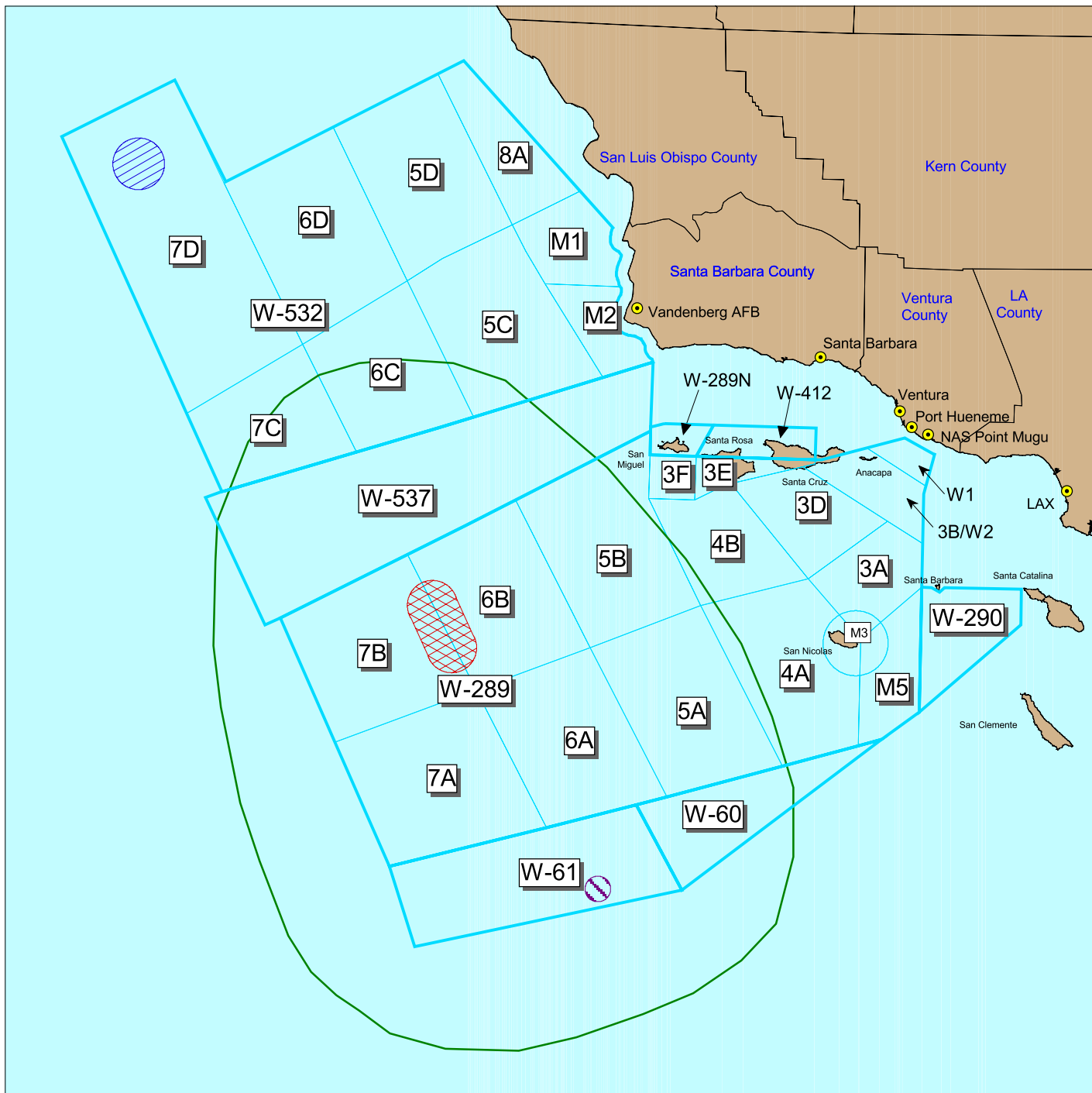
### 2.1.1.3 Lower Tier

#### A - General Overview






Lower tier TMD is a closer-in intercept of the ballistic target after reentry into the atmosphere. Lower tier systems engage threat ballistic targets at lower altitudes, closer to friendly forces, defending high value point and area targets such as airfields, carrier battle groups, armored columns, and supply depots. Depending on the firing and intercept geometry, in addition to the required instrumentation, the Point Mugu Sea Range could accommodate lower tier events of both the ballistic target missile and the lower tier interceptor missile. NAWCWPNS Point Mugu proposes to accommodate up to three lower tier test or training events per year. [Figure 2-2c](#) shows the approximate range areas to be used to accommodate representative lower tier activities.

# TMD Element

## B) Representative Upper Tier Scenario



### Legend

-  Interceptor Launch Area
-  Point Mugu Sea Range
-  Target Launch Area
-  Debris Intercept Area
-  Hazard Area



40                      0                      40 Nautical Miles

Projection: Universal Transverse Mercator  
North American Datum 1927  
Zone 11






**Figure**  
**2-2b**

# TMD Element

## C) Representative Lower Tier Scenario



### Legend

-  Interceptor Launch Area
-  Point Mugu Sea Range
-  Target Launch Area
-  Debris Intercept Area
-  Hazard Area



40                      0                      40 Nautical Miles

Projection: Universal Transverse Mercator  
North American Datum 1927  
Zone 11

**Figure**  
**2-2c**

## B - Lower Tier Participants

Interceptor missiles could be sea-launched (e.g., using a vessel or launch barge) from the Sea Range or launched from San Nicolas Island. Targets could be air-launched (e.g., from C-130 aircraft), sea-launched, or surface-launched from San Nicolas Island. If vessels are used to fire the missile or target, they would likely be operating on the Sea Range for two to three days during preparation for the test or training event, as would the necessary support ships. Range safety and radar surveillance aircraft could be operating on the Sea Range for up to 10 hours or more depending on the needs of the test or training event. Aviation rescue and support boats would be on the Sea Range only during the test or training event because their endurance is constrained by fuel.

## C - Hazard and Debris Patterns

For lower tier events on the Sea Range, the intercepts would occur at much lower altitudes than upper tier and well within the atmosphere (about 50,000 to 100,000 feet [15,240 to 30,480 m]). Thus, both the debris pattern footprint and safety hazard patterns would become correspondingly smaller and density of debris somewhat higher (see [Figure 2-2c](#)).

### 2.1.1.4 Nearshore Intercept

#### A - General Overview

These test and training events are designed for firing surface-to-air missiles and air-to-air missiles against a low-altitude subsonic target flown in a nearshore environment. The nearshore intercept provides a challenge for the weapon system because the interceptor missile must acquire and intercept the target at a low altitude in the presence of a land background (which adds clutter to the missile radar environment). The test scenario would involve the flight of a subsonic target a minimum of 0.5 nautical mile (NM) (0.9 kilometers [km]) offshore San Nicolas Island to present an intercept opportunity for a missile engagement from a ship or aircraft. All intercepts would be more than 1 NM (1.9 km) offshore of San Nicolas Island and at low altitudes (about 1,000 feet [300 m]). The debris pattern from the interceptor missile would be small and would be located entirely over the water at least 1 NM (1.9 km) offshore. Although the other TMD events may involve the use of both live and inert warheads, the missiles associated with nearshore intercept events would not use live warheads and the targets would be recovered, if possible. Because of the low altitude of the target, the ships would be relatively close to San Nicolas Island, within 20 NM (37 km). NAWCWPNS Point Mugu proposes to accommodate up to eight nearshore intercept test or training events per year. [Figure 2-2d](#) shows the approximate range areas to be used to accommodate representative nearshore intercept activities. [Figure 2-2e](#) shows the approximate geometry of the nearshore intercept in relation to San Nicolas Island.

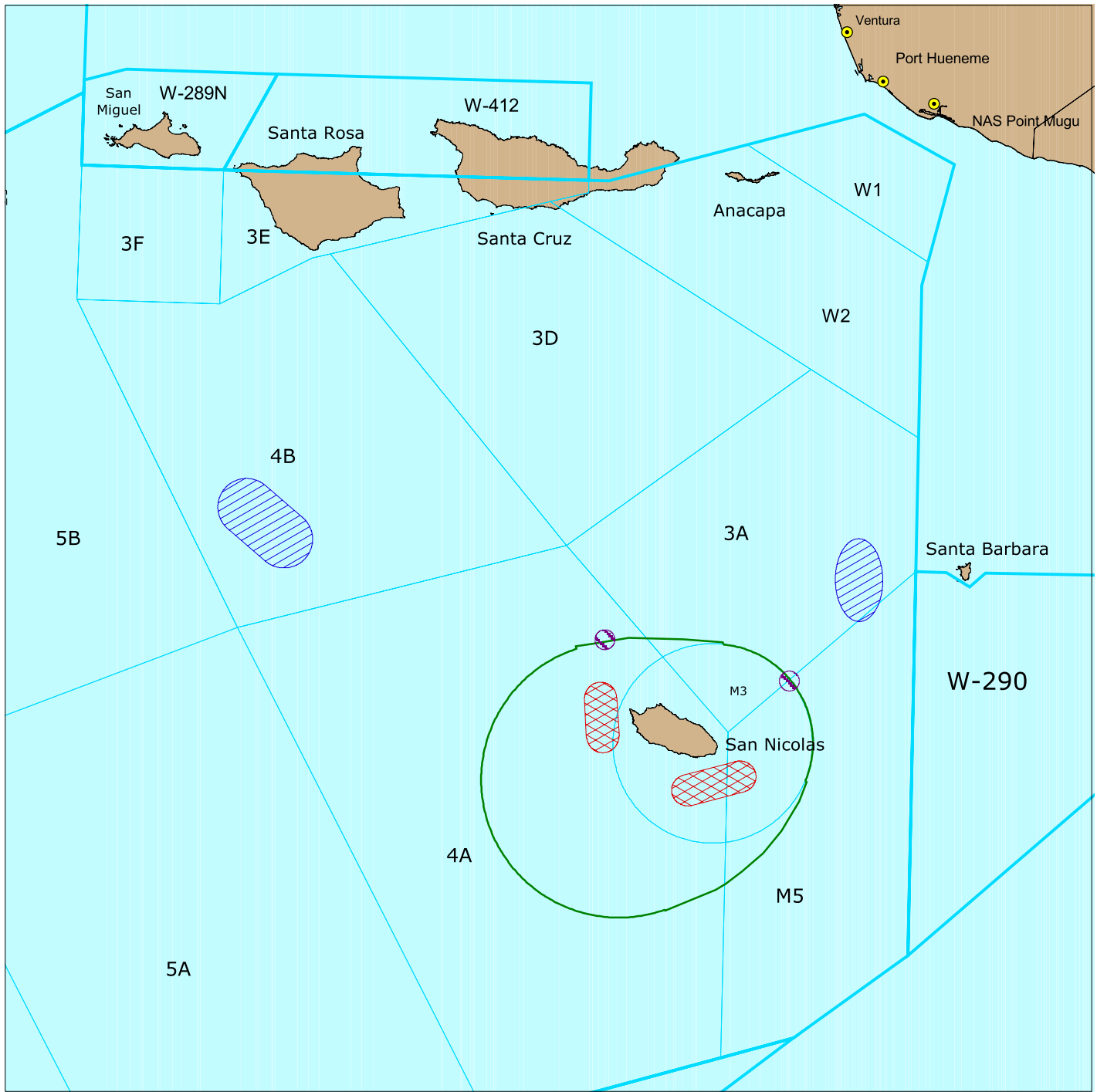
#### B - Nearshore Intercept Participants

Interceptor missiles could be sea-launched (e.g., using a vessel or launch barge) from the Sea Range or air-launched. Targets could be air-launched (e.g., from C-130 aircraft) or surface-launched from NAS Point Mugu. If a vessel is used to fire the missile, it would likely be on the Sea Range for two or three days during preparation for the test or training event, as would the necessary support ships. The range safety aircraft, target launch aircraft, and the target recovery helicopter would be on the range only on the day of the test or training event. The range safety aircraft would fly the longest sortie, lasting over 5 hours. The target launch aircraft sortie would likely last 4 hours or less, depending on the needs of the test or training event. The altitude of the target launch aircraft would be under 10,000 feet (3,050 m)



# TMD Element

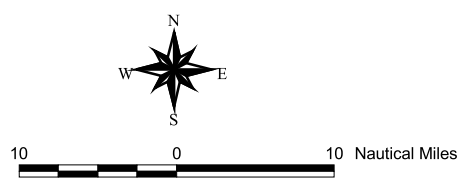
## D) Representative Nearshore Intercept Scenarios



### Legend

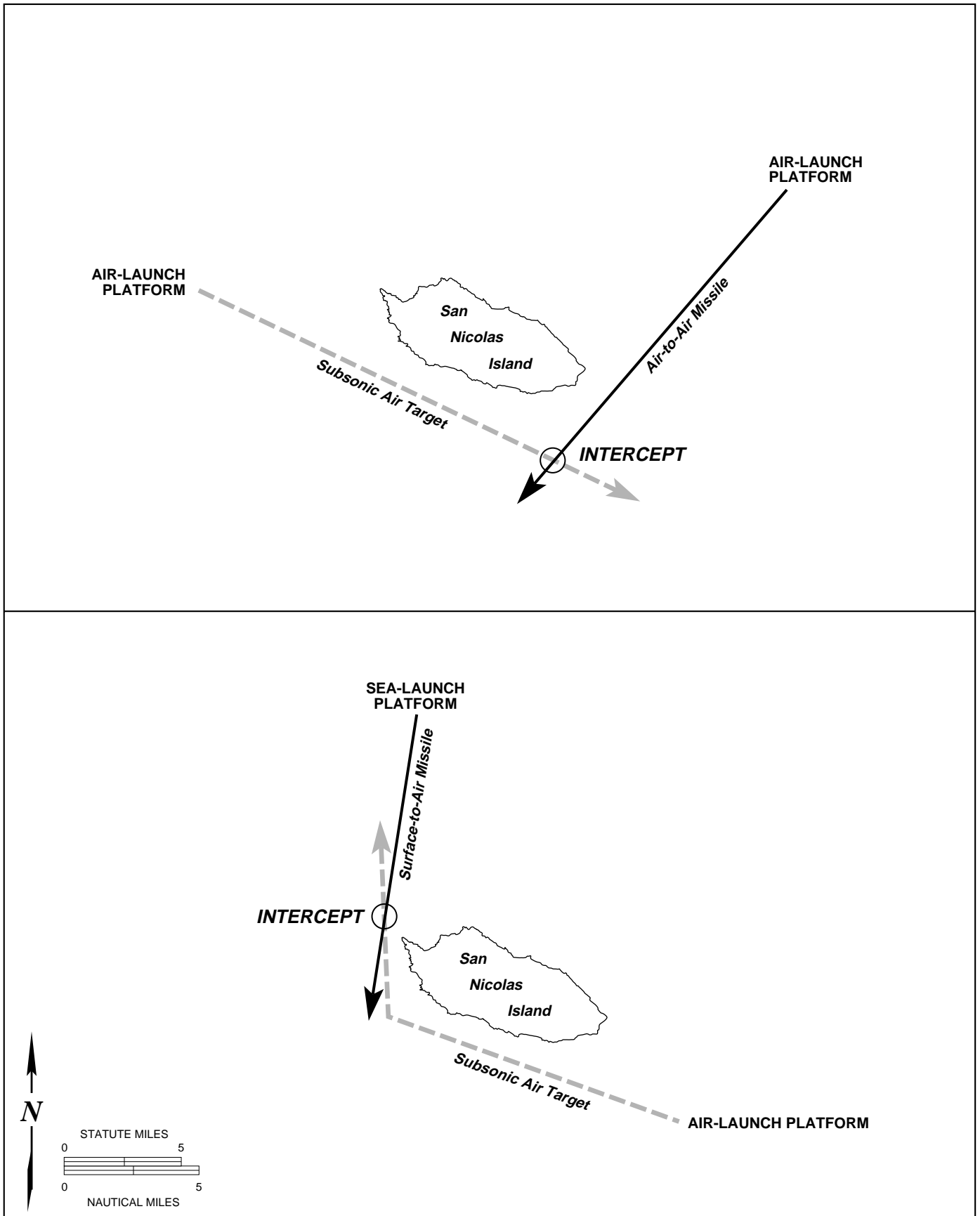
- Interceptor Launch Area
- Point Mugu Sea Range
- Target Launch Area
- Debris Intercept Area
- Hazard Area

Note : Debris pattern will always be at least 1 NM offshore.



Projection: Universal Transverse Mercator  
North American Datum 1927  
Zone 11

**Figure**  
**2-2d**



**Figure 2-2e**  
**Proposed Representative Nearshore Intercept Geometry**  
**at San Nicolas Island**



since the intercept is a low-altitude event. The helicopter’s recovery sortie from Point Mugu to the range would be about 2 hours or less at a low altitude, under 1,000 feet (300 m).

### C - Hazard and Debris Patterns

The nearshore intercept would produce a relatively small debris pattern footprint since the intercept occurs at altitudes less than 1,000 feet (300 m). However, the density of the debris within the footprint would be higher since there is little time for dispersion. Although the intercept is designed to occur near San Nicolas Island, the firing geometry would require that the entire debris pattern impact the water at least 1 NM (1.9 km) offshore in order not to endanger lives or property on the island.

Table 2-1 shows the maximum increase in the number of operations that could be accommodated on the Sea Range under the proposed action for each component of TMD. Supporting data for these event numbers are included in Appendix B.

**Table 2-1. Estimated Annual TMD Testing and Training Activities**

	Aircraft Sorties	Ships and Boats	Missiles Fired	Targets Launched
<b>Theater Missile Defense</b>				
Boost Phase Intercept	30	15	3	3
Upper Tier	12	23	6	3
Lower Tier	15	23	3	3
Nearshore Intercept	32	50	8	8
<b>Total Proposed for TMD</b>	<b>89</b>	<b>111<sup>1</sup></b>	<b>20</b>	<b>17</b>

<sup>1</sup> Includes 91 range support boats.

### 2.1.2 Training Element

The Sea Range currently supports two Fleet training exercises per year, four small-scale amphibious training exercises per year, and two special warfare training exercises per year. In addition to this current level of training, NAWCWPNS Point Mugu proposes to accommodate one additional Fleet training exercise per year, and two additional special warfare exercises per year (small-scale amphibious training would remain at current levels).

#### 2.1.2.1 Fleet Exercise Training

A Fleet Exercise, or FLEETEX, is a generic term which broadly encompasses a variety of Fleet training activities including but not limited to missile exercises, aircraft operations, joint training activities (e.g., Air Force and Navy), tactical training, and Fleet battle experiments. A FLEETEX is a coordinated, multi-ship exercise designed around particular training events and scenarios. The objective of a FLEETEX is to conduct realistic fleet operations with minimal operational constraints, consistent with the safety of participants and non-participants. A FLEETEX is typically conducted during a consecutive period of two to three days. The exercises employ units which the Navy would use in combat (i.e., a Battle Group or some of its components). Some FLEETEXs may have a fleet air-defense focus; others may emphasize surface or littoral warfare activities. Each is tailored to meet the Navy’s training needs at the time of the exercise. A typical FLEETEX scenario at the Sea Range involves launching 33 targets intercepted by a similar number of missiles. Because of the large portions of the Sea Range covered, Point Mugu would perform continuous air and sea surveillance with aircraft augmented with land-based

radars during this scenario. The Battle Group also provides aerial coverage for operational safety. FLEETEXs are currently the largest and most complex scenarios performed on the Sea Range. FLEETEXs are currently performed on the Point Mugu Sea Range twice per year (refer to [Chapter 3](#) for a description of current activities). Under the proposed action, that tempo could increase to three per year. NAWCWPNS Point Mugu does not conduct test or training activities involving systems related to anti-submarine warfare (e.g., sonar, underwater explosives). In some FLEETEXs, however, submarines are used to launch missiles.

### 2.1.2.2 Special Warfare Training

Special warfare training is a type of littoral training that currently takes place on the Sea Range. Special warfare operations generally involve activities of individuals (less than ten personnel) conducting simulated clandestine operations at San Nicolas Island. Typical operations include parachute insertion, swimmer penetration, hydrographic reconnaissance, inflatable boat operations, beach patrolling, and ingress and egress by aircraft.

In addition to the ongoing special warfare operations at their current level of activity (two per year), NAWCWPNS Point Mugu proposes to increase special warfare training activity by Sea, Air, and Land teams (or SEALs) of the Navy Special Forces Command from two to four times per year.

[Table 2-2](#) shows the projected increase in the number of training operations that could be accommodated on the Sea Range under the proposed action. Supporting data for these event numbers are included in [Appendix B](#).

**Table 2-2. Proposed Additional Training Activity Per Year**

Activity	Aircraft Sorties	Ships and Boats	Missiles Fired/Ordnance Deployed <sup>2</sup>	Targets Launched <sup>2</sup>
FLEETEX Expansion	57	18 <sup>1</sup>	34	33
Special Warfare Training	4	32	0	0

<sup>1</sup> Includes 12 range support boats.

<sup>2</sup> The number of *Missiles Fired/Ordnance Deployed* and *Targets Launched* are not equal because their ratio of use varies by event.

### 2.1.3 Facility Modernization Element

#### 2.1.3.1 Point Mugu Modernizations

As part of the Facility Modernization Element, NAWCWPNS Point Mugu proposes to use two previously used launch sites (each containing two pads) to serve as new missile launch locations at NAS Point Mugu. Currently, approximately six missiles per year are launched from a truck directly in front of the Building 55 Launch Complex ([Figure 2-3a](#)). In addition, targets are launched from this complex. These targets require the use of a jet assisted takeoff (JATO) bottle. The bottle falls off soon after launch and typically lands 700 to 1,400 feet (210 to 420 m) in front of Building 55 (see [Figure 2-3a](#)). Four previously used launch pads are located along Beach Road between the beach and Mugu Lagoon (see [Figure 2-3a](#)). Under the proposed action, the Bravo pad (also known as *B pad*) or the Charlie pad (*C pad*) may be used for missile launches at this location. Missiles could either be truck-launched (the truck has a self-contained launch system and would be driven to the B or C pad) or launched directly from a mobile launch system located on the B or C pad. No construction would be required since missiles could



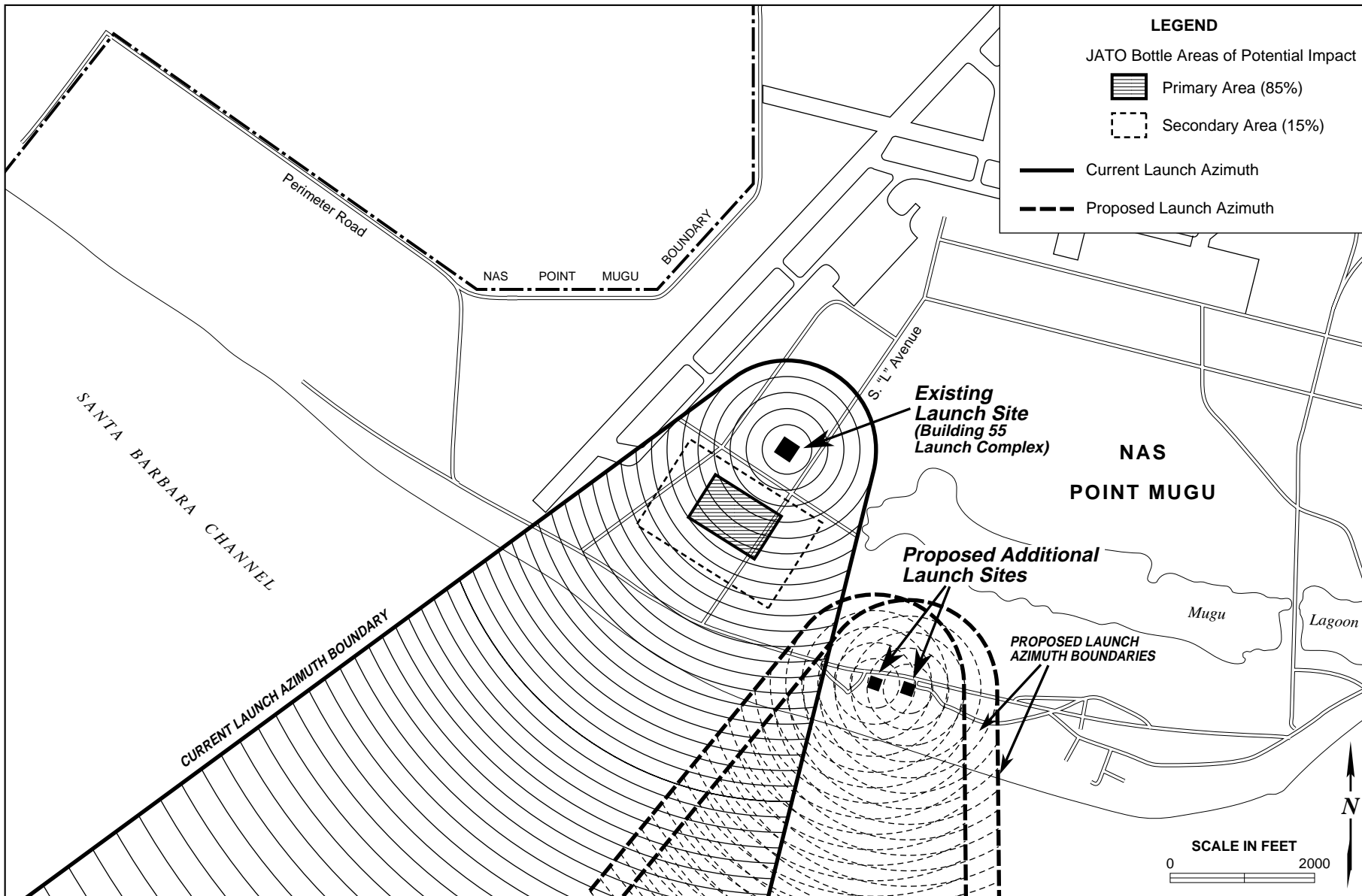


Figure 2-3a  
Enhanced Capabilities: Proposed Launch Sites at NAS Point Mugu



be launched off the existing pads; nevertheless, since the pads are currently not used for launching, some minor pad preparation (e.g., cleaning, maintenance, and security) would be required. Use of these locations would not affect the number of missiles launched from NAS Point Mugu. Safety and clearance procedures performed prior to missile launches would be identical to current methods.

Some of the proposed beach launches may include the use of solid propellant boosters. These solid propellant boosters provide the initial thrust necessary until the launched vehicle can propel itself independently. These boosters fall off soon after launch. Unlike JATO bottles, these boosters would typically land in the ocean 0.25 to 0.50 mile (0.40 to 0.80 km) offshore. The solid propellant contained in the boosters burns out during the launch operation and would be completely expended prior to the booster entering the ocean.

### 2.1.3.2 San Nicolas Island Modernizations

To maintain top-quality support of existing and future test and training operations, San Nicolas Island modernization is included as a component of the proposed action. The proposed San Nicolas Island modernizations include construction of additional facilities and the addition of two new target launch systems. The proposed modernizations would not require additional staff on the island. [Figure 2-3b](#) depicts the proposed San Nicolas Island modernizations. [Table 2-3](#) summarizes the modernization proposals. Where applicable, estimated footprint areas of new construction are also shown in the table.

**Table 2-3. Proposed New Construction for San Nicolas Island Modernization Proposals**

# <sup>1</sup>	Modernization	Total Area of Disturbance
1	Add vertical missile launcher to existing launch pad	None (build on existing pad)
2	Construct new 50K launcher for target missiles	1,200 SF (111 m <sup>2</sup> ) concrete pad
3	Add new Range Support Building	12,000 SF (1,115 m <sup>2</sup> ) construction area
4	Develop five new multiple-purpose instrumentation sites	15,000 SF (1,394 m <sup>2</sup> ) construction area (each)

SF = square feet; m<sup>2</sup> = square meters

<sup>1</sup> Numbers correspond to those shown on [Figure 2-3b](#).

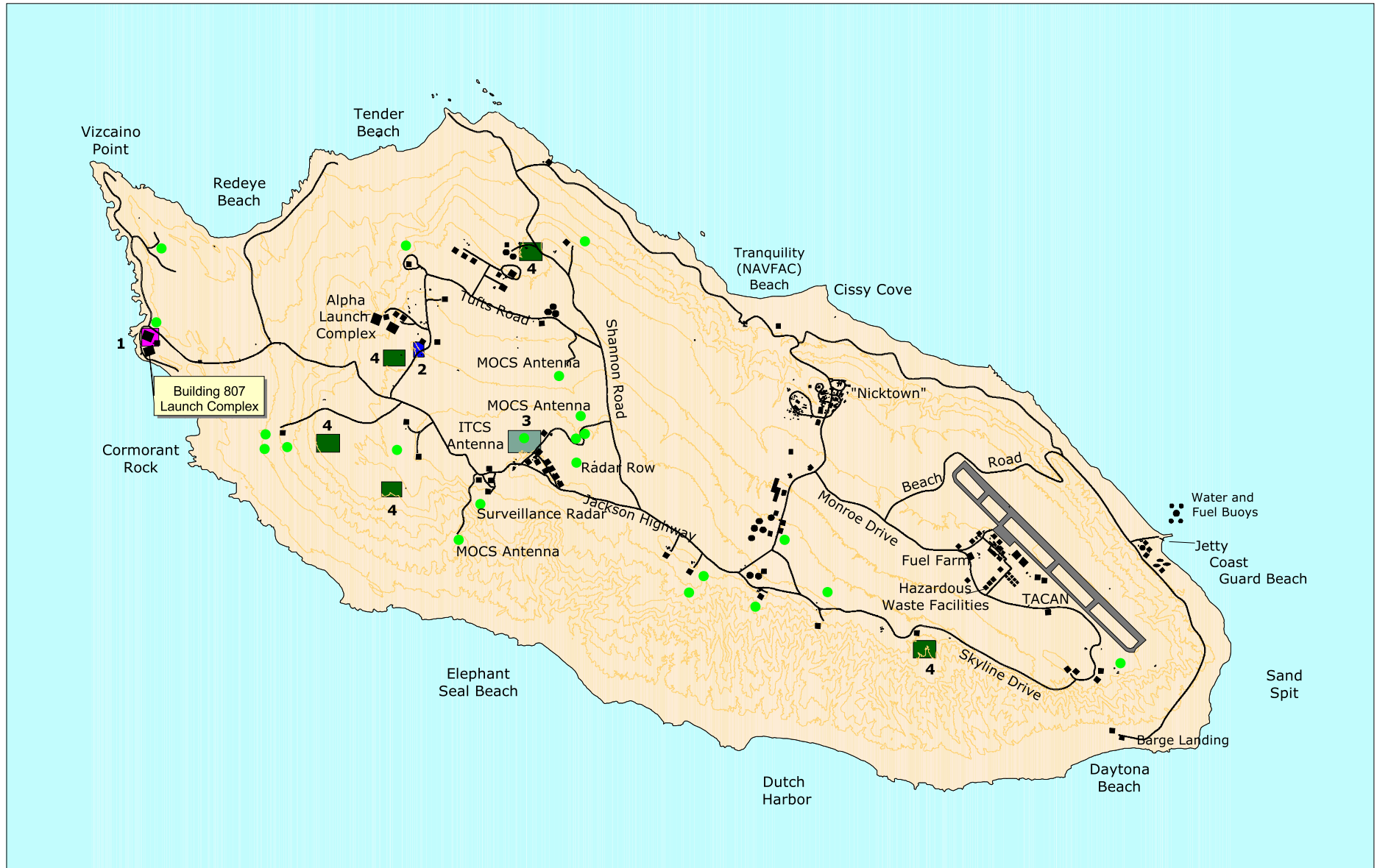
Source: NAWCWPNS Point Mugu 1996l.

**1) Vertical Launch System.** As part of the San Nicolas Island modernizations, a vertical launch system would be constructed at one of the pads at the Building 807 Launch Complex on the west end of the island (see [Figure 2-3b](#)). A land-based vertical launch capability is useful for missile testing and training events because it effectively simulates a realistic shipboard launch scenario without the logistics of launching from a ship on the Sea Range. The launcher would be placed on a previously graded area which is devoid of vegetation. The siting criteria for this facility include an onshore location near sea level which is logistically feasible (i.e., missiles can be transported safely to and from the site, and there is an adequate safety buffer zone around the site). San Nicolas Island is suitable for the proposed vertical launch system since it is currently used for missile launches and since safety procedures have already been established for missile launches at the west end of the island. Consequently, since it is located within the Sea Range, San Nicolas Island would be able to effectively simulate a shipboard launch during weapons testing and training events.

A vertical launcher approximately 30 feet (9.1 m) tall and stabilized by four cables would be placed on an existing pad. A specific design has not yet been selected; however, instead of cables, the launcher could potentially be stabilized by placing mounded fill material on all four sides. This fill material would be fully contained within the boundaries of the existing launch pad. Missiles launched from the new system would be used in support of Fleet and test and evaluation (T&E) activities conducted on the Sea

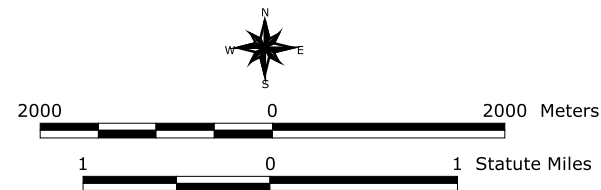


# San Nicolas Island Modernization Locations of Proposed New Facilities



## Legend

- |   |  |
|---|--|
| <span style="display: inline-block; width: 15px; height: 15px; background-color: magenta; border: 1px solid black;"></span> 1) Proposed Vertical Launch System            | <span style="display: inline-block; width: 15px; border-bottom: 1px solid black;"></span> 100' Contour Lines   |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border: 1px solid black;"></span> 2) Proposed 50K Launcher Site                    | <span style="display: inline-block; width: 15px; height: 15px; background-color: gray; border: 1px solid black;"></span> Existing Airfield                             |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: cyan; border: 1px solid black;"></span> 3) Proposed Range Support Building               | <span style="display: inline-block; width: 15px; height: 15px; background-color: black; border: 1px solid black;"></span> Existing Structures                          |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></span> 4) Proposed Multi-Purpose Instrumentation Sites | <span style="display: inline-block; width: 10px; height: 10px; background-color: green; border-radius: 50%; border: 1px solid black;"></span> Existing Instrumentation |



Projection: Universal Transverse Mercator, Zone 11  
 North American Datum of 1927  
 Scale shown is 1:62,500  
 Source: NAWCWPNS.

Figure  
2-3b

Note: Additional Information is presented in Table 2-3.

Range and would be similar to missiles currently launched from San Nicolas Island. Missiles would use the same azimuth established for target launches initiated from the west end of the island. Therefore, the same safety procedures used for all launches at this location would apply to the proposed vertical launch system. Under the proposed action, the vertical launch system would be used approximately three times per year.

2) 50K Launcher. NAWCWPNS Point Mugu proposes to add a launch site near the existing inland launch area (see [Figure 2-3b](#)), which is currently used for many of the target launches from San Nicolas Island. This launcher would facilitate a wider variety of target support for training and testing operations on the Sea Range as it would be capable of launching targets and missiles weighing up to 50,000 pounds (22,680 kg). The largest vehicle currently launched at San Nicolas Island is the Vandal missile target (approximately 38,000 pounds [17,237 kg]). The 50K launch site would consist of a large, heavy-duty rail launcher on a launch pad similar in size to the existing Vandal launch pad (approximately 1,200 square feet [111 square meters]). It would be located about one half mile (0.8 km) southeast of the Vandal pad at a location currently used for occasional mobile launch activities (see [Figure 2-3b](#)). Under the proposed action, the 50K launcher would be used approximately three times per year.

3) Range Support Building. A new range support building would provide secure work spaces for project personnel, onsite operational display capability, and debriefing/teleconferencing support. The proposed site is on the central plateau of the island north of Jackson Highway (see [Figure 2-3b](#)).

4) Multi-Purpose Instrumentation Sites. Five strategically located multi-purpose instrumentation sites would be constructed. These facilities would increase NAWCWPNS capabilities through the use of mobile instrumentation and would also increase opportunities for resource sharing. Examples of mobile instrumentation, which could be used at the proposed sites, include portable communication vans, portable optics stations, and portable tracking systems. All of this equipment would be portable and used only during the operations they would support. Each site would require approximately 15,000 square feet (1,394 square meters). The five proposed locations are shown on [Figure 2-3b](#).

#### **2.1.4 Operations Baseline**

Since the establishment of the Point Mugu Sea Range in 1946, the tempo and types of operations have fluctuated. These fluctuations have been due to changing world situations, the introduction of advances in warfighting doctrine (most recently focusing on longer-range and highly-accurate standoff weapons, including guided missiles), phased development of weapons acquisition programs, and the DoD test and evaluation budget. For example, Sea Range operations reached a high during the early 1980s when the DoD budget was robust, but since the close of the Cold War, lower levels of activity have been experienced. Most of the factors influencing tempo and types of operations are fluid in nature and will continue to cause fluctuations in Sea Range activity levels. Thus, simply using the most recent recorded data is not representative of long-term operations.

Accordingly, it became important to choose a baseline that accurately reflects the typical Sea Range level of operations and against which relative impacts of the proposed action could be measured. As a result, fiscal year 1995 (FY95) was chosen as the period being the most representative of baseline operations on the Point Mugu Sea Range. The operational activity conducted during FY95 reflects the broad range of test and training activity currently occurring on the Sea Range with respect to aircraft and ship operations. In addition, the FY95 operations data reflect the historical operational tempo for the range. Lastly, Sea Range infrastructure and work force have been configured to support the FY95 operational type and tempo. Accordingly, data from FY95 are used throughout this document as the baseline for



evaluating environmental impacts that may result from the proposed TMD, training, and facility modernization elements.

In general, activity levels can be subdivided into categories which include aircraft sorties; ships and boats afloat within or near the Sea Range; missile firings; and target launches. Table 2-4 presents the baseline operations tempo plus the proposed new activities.

**Table 2-4. Baseline Plus Proposed Sea Range Activities**

Category	Aircraft Sorties	Ships and Boats <sup>1</sup>	Missiles Fired/ Ordnance Deployed <sup>2</sup>	Targets Launched <sup>2</sup>
<b>Operations Baseline<sup>3</sup></b>	3,934	799	351	300
<b>Proposed Action</b>				
Theater Missile Defense	89	111	20	17
Additional FLEETEX	57	18	34	33
Additional Special Warfare	4	32	0	0
<b>Total Proposed Action</b>	<b>150</b>	<b>161</b>	<b>54</b>	<b>50</b>
<b>Total</b>	<b>4,084</b>	<b>960</b>	<b>405</b>	<b>350</b>

<sup>1</sup> Includes range support boats.

<sup>2</sup> The number of *Missiles Fired/Ordnance Deployed* and *Targets Launched* are not equal because their ratio of use varies by event.

<sup>3</sup> See Section 2.1.4, Operations Baseline.

## 2.2 ALTERNATIVES

Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [C.F.R.] 1502.14) and Navy Procedures (32 C.F.R. 775) provide guidance on the consideration of alternatives in an EIS and promote the rigorous exploration and objective evaluation of all reasonable alternatives. Reasonable alternatives must meet the stated objectives of the proposed action. Since the purpose and need for the proposed action are to enhance NAWCWPNS Point Mugu capabilities, alternative sites do not provide reasonable alternatives and are thus beyond the scope of this EIS/OEIS.

To help identify reasonable alternatives, the Navy eliminated testing, training, and facility modernization proposals that would be inconsistent with the Sea Range mission and associated facilities, instrumentation, and infrastructure that support this mission. Test and training alternatives that could be better supported at another location were also considered unreasonable; rather than duplicate capabilities of another range, alternatives need to better accommodate the existing test and training capabilities at NAWCWPNS Point Mugu. Selection criteria were developed to help identify potential alternatives and eliminate unreasonable alternatives from further consideration. Selection criteria include: 1) reasonable alternatives must fulfill the need for, and purpose of, the proposed action; 2) reasonable alternatives must be consistent with the strategic vision for NAWCWPNS Point Mugu; and 3) supporting facilities, instrumentation, and/or infrastructure must be complementary to existing Sea Range capabilities. Alternatives that do not meet one or more of these criteria were not carried forward for analysis within this EIS/OEIS.

### 2.2.1 Alternatives Eliminated From Further Consideration

Several alternative test, training, and facility modernization components were initially screened and evaluated to determine their ability to meet the selection criteria but were eliminated from consideration due to their inconsistency with both the mission and strategic vision for the Point Mugu Sea Range.

Alternative test, training, and facility modernization components eliminated from consideration and their comparison to the selection criteria are presented in Table 2-5. For comparison purposes, Table 2-5 also includes the proposed action components. A brief description of the alternative components not carried forward for analysis and the reasons for their rejection are provided below.

**Table 2-5. Potential Alternative Components and Selection Criteria**

	Selection Criteria		
	Meets Purpose and Need for the Proposed Action	Consistent with Mission and Strategic Vision for Sea Range	Supporting Facilities, Instrumentation and/or Infrastructure are Complementary to Existing Sea Range Capabilities
<b>Alternative Tests</b>			
ASW	✗	✗	●
HE underwater	✗	✗	●
Line detonation	✗	✗	●
TMD <sup>1,2</sup>	●	●	●
<b>Alternative Training Exercises</b>			
LCACs	●	✗	●
Live munitions on San Nicolas Island	●	✗	●
Underwater explosives	●	✗	●
Additional FLEETEX <sup>1</sup>	●	●	●
Additional Special Warfare <sup>1</sup>	●	●	●
<b>Alternative Facility Modernizations</b>			
Instrumented Underwater Acoustic Range	✗	✗	✗
Space Launch Capability	✗	✗	✗
Vertical Missile Launcher <sup>1</sup>	●	●	●
50K Launcher for Target Missiles <sup>1</sup>	●	●	●
New Range Support Building <sup>1</sup>	●	●	●
New Multiple-Purpose Instrumentation Sites <sup>1</sup>	●	●	●

<sup>1</sup> This component is part of the proposed action.

<sup>2</sup> Includes testing and training activities.

● = meets criterion

ASW = anti-submarine warfare

TMD = theater missile defense

✗ = does not meet criterion

HE = high explosive

LCAC = landing craft air cushion

### A - Alternative Tests

Adding new capabilities for anti-submarine warfare (ASW), tests that use high explosives (HE) underwater, and tests that require line detonation were initially considered in addition to TMD as testing alternatives but were rejected due to their inability to meet the selection criteria. Although such tests may allow for the evaluation of new technologies and threat scenarios, a purpose of the proposed action, they are all inconsistent with the mission and strategic vision for NAWCWPNS Point Mugu. The Sea Range is used primarily for testing and evaluation of weapons systems associated with air warfare, not submarine warfare; therefore, all three alternative tests are inconsistent with both the mission and strategic vision for NAWCWPNS Point Mugu. For these reasons, these alternative tests were eliminated from further consideration.



## B - Alternative Training Exercises

Adding new capabilities for training exercises, including the use of landing craft air cushions (LCACs), training with live munitions on San Nicolas Island, and training involving underwater explosives were initially considered in addition to increasing the number of FLEETEXs but were rejected because they were not consistent with the strategic vision for the Point Mugu Sea Range. As discussed above for testing, the Sea Range supports aeronautical and related technology systems, not systems related to submarine warfare. For more than 50 years, the Sea Range has been an airborne missile testing and training range; training events requiring LCACs or underwater explosives would be inconsistent with the future vision for NAWCWPNS Point Mugu. Therefore, none of the alternative training exercises were carried forward for analysis.

## C - Alternative Facility Modernizations

Development of an instrumented underwater acoustic range and development of a space launch capability were initially considered as alternative facility modernization proposals but were eliminated due to their inability to meet the selection criteria. Although these alternatives could provide the range with expanded test and training opportunities, both are incompatible with the mission and strategic vision for the Sea Range. Instrumented underwater acoustic ranges exist at other locations and typically support submarine warfare test and training activities that are inconsistent with the Sea Range role as an air warfare testing center. Space launch capabilities also exist at other locations and launching vehicles over 50,000 pounds would be incompatible with existing launch operations at NAS Point Mugu and San Nicolas Island. In comparison, the facility modernization components included in the proposed action have been identified as specific requirements to maintain top-quality support of existing and future test and training operations. These proposals would enhance the capabilities that support testing and training activities presently being carried out at Point Mugu.

### **2.2.2 Alternatives Considered**

Three alternatives are analyzed in this EIS/OEIS. These include the No Action Alternative, the Minimum Components Alternative, and the Preferred Alternative as described below.

#### **2.2.2.1 No Action Alternative - Current Operations**

The NAWCWPNS Point Mugu Sea Range has been operated by the Department of the Navy for more than 50 years. During the baseline year, 3,359 operations were scheduled on the Sea Range. Under the No Action Alternative, current test and training operations would continue and the Sea Range would not accommodate TMD testing and training. The ongoing five categories of tests would continue to be conducted on the Sea Range (current operations are described in more detail in [Chapter 3](#)). In addition, the three types of training activities would continue at current levels, and proposed facility modernizations would not be implemented.

Although selection of the No Action Alternative would not allow the Sea Range to accommodate TMD events or increase the levels of current training activities, ongoing test and training operations at the Point Mugu Sea Range would not be affected. [Table 2-6](#) shows the components of current activities that comprise the No Action Alternative. Evaluation of the No Action Alternative in this EIS/OEIS provides a credible baseline for assessing environmental impacts of the Minimum Components Alternative and the Preferred Alternative, described below.



**Table 2-6. Current Activities**

Current Types of Tests	Current Types of Training
Air-to-Air	Fleet Training Exercises (2/year)
Air-to-Surface	Small-Scale Amphibious Warfare Training (4/year)
Surface-to-Air	Special Warfare Training (2/year)
Surface-to-Surface	
Subsurface-to-Surface	

2.2.2.2 Minimum Components Alternative

Although both the Preferred Alternative and the Minimum Components Alternative meet all selection criteria, the Minimum Components Alternative meets the purpose and need of the proposed action while minimizing the number of components that would be implemented. If the Minimum Components Alternative is selected, only one component of each proposed action element (i.e., TMD, training, and facility modernization) would be implemented. Under this alternative, in addition to current testing and training activities, the Sea Range would be able to accommodate up to eight nearshore intercept events and one additional FLEETEX per year. The only facility modernization component which would be implemented is the construction of five multiple-purpose instrumentation sites on San Nicolas Island. The three components that compose the Minimum Components Alternative were selected based on the goal of meeting the purpose and need for the proposed action to the maximum extent possible while minimizing the number of activities to be implemented. For example, accommodation of nearshore intercept would provide up to eight opportunities a year to evaluate new technologies and threat scenarios, as compared with the lower operational tempo of the other three TMD activities. Since special warfare training typically involves fewer than 30 personnel while a FLEETEX involves an entire Battle Group, this component was selected on the basis of maximizing the effectiveness of training. Finally, in comparison with the other facility modernization proposals, constructing five multi-purpose instrumentation sites on San Nicolas Island would help to maximize the Sea Range’s capability to accommodate evolving technologies. Although this alternative meets the purpose and need for the proposed action, the capability of the Sea Range to support existing and future operations would not be fulfilled to the extent it would under the Preferred Alternative.

2.2.2.3 Preferred Alternative

The Preferred Alternative was described in detail earlier in this Chapter (Section 2.1). In addition to the five categories of tests currently conducted on the Sea Range, under the Preferred Alternative the Sea Range would be able to accommodate TMD testing and training activities. In addition, the Sea Range would be able to accommodate an increase in the level of current training activities. Facility modernization components at both NAS Point Mugu and San Nicolas Island would be implemented to enhance the capability of the Sea Range to support existing and future operations. A comparison of the three alternatives analyzed in this EIS/OEIS is provided in Table 2-7.



**Table 2-7. Alternatives Analyzed in this EIS/OEIS**

Operational Element	Alternatives		
	No Action Alternative	Minimum Components Alternative	Preferred Alternative
<b>Current Operations</b>			
Air-to-Air	Current RDT&E Levels	Current RDT&E Levels	Current RDT&E Levels
Air-to-Surface			
Surface-to-Air			
Surface-to-Surface			
Subsurface-to-Surface			
<b>TMD Element (Per Year)</b>			
Boost Phase	0	0	3
Upper Tier	0	0	3
Lower Tier	0	0	3
Nearshore Intercept	0	8	8
<b>Training Element (Per Year)</b>			
FLEETEX	2	3	3
Special Warfare	2	2	4
<b>Facility Modernization Element</b>			
NAS Point Mugu	None	None	New Launch Locations
San Nicolas Island	None	- 5 multi-purpose instrumentation sites	- Missile Launcher - Vertical Launcher - Range Support Building - 5 multi-purpose instrumentation sites

RDT&E = Research, Development, Test and Evaluation